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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/423,633	11/17/1999	KATSUHIKO HIRAMATSU	P18671	6986

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GREENBLUM & BERNSTEIN
1941 ROLAND CLARKE PLACE
RESTON, VA 20191

EXAMINER

TORRES, MARCOS L

ART UNIT	PAPER NUMBER
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2683

DATE MAILED: 09/06/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary

Application No.

09/423,633

Applicant(s)

HIRAMATSU, KATSUHIKO

Examiner

Marcos L Torres

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 June 2002.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 3-8 and 12-20 is/are rejected.
- 7) ☒ Claim(s) 9-11 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 1, 3-6, 15, 17-19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Forssen in view of Dunbridge.

As to claim 1, 15 and 20, Forssen discloses a base station apparatus comprising: a downlink transmission section that transmits a first signal with a directivity directed to a mobile station apparatus and a second signal with directivity wider than that of the first signal; a reception section that receives a reception of the first signal to the second signal measured in the mobile station apparatus; a determining section that determines whether the directivity of the first signal should be changed (see col. 3, line 65 – col. 4, line 14); and a directivity control section that changes the directivity of the first signal based on a result of determination by the determining section (see col. 5 lines 13-14).

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Forssen do not specifically disclose a reception section that receives a reception power ratio signal measured in the mobile station apparatus; a determining section that determines whether the directivity should be changed based on a difference between a transmission power ratio of the signals and the reception power ratio. Dunbridge discloses a reception section that receives a reception power ratio signal measured in the mobile station apparatus; a determining section that determines whether the directivity should be changed based on a difference between a transmission power ratio of the signals and the reception power ratio (see col. 6, lines 23-36). Therefore, it would have been obvious to one of the ordinary skill in the art at the time of the invention to combine the Dunbridge teachings in the Forssen system for a reliable signal quality.

As to claim 3 and 18, Forssen discloses the base station apparatus wherein, if the difference between the reception power and the transmission power is greater than a first threshold and the mobile station apparatus to which the first signal was transmitted requests the transmission power to be increased, the determining section determines that the directivity of the first signal should be changed (see col. 4, lines 36-59). Dunbridge discloses the use of reception power ratio and the transmission power ratio (see col. 6, lines 23-36). Therefore, it would have been obvious to one of the ordinary skill in the art at the time of the invention to add the Dunbridge teachings in the Forssen system for an enhanced signal without fading.

As to claims 4 and 19, Dunbridge discloses the base station apparatus wherein, if the difference between the reception power and the transmission power is greater than a first threshold and the reception power of a signal transmitted from the mobile

station apparatus to which the first signal was transmitted is smaller than a second threshold, the determining section determines that the directivity of the first signal should be changed (see col. 6, lines 23-36).

As to claim 5, Forssen discloses the base station apparatus further comprising a transmission power control section that controls transmission power of a transmission signal, the transmission power control section not changing the transmission power if the determining section determines that the directivity should be changed (see col. 4, line 60 – col. 7, line 26).

As to claim 6, Forssen discloses the base station apparatus wherein, if the determining section determines that the directivity should be changed, the directivity control section changes the directivity orientation without changing the width of the directivity (see col. 9, lines 51-54).

As to claim 17, Forssen discloses to change the directivity of the signal measuring the power of the signal (see col. 4, line 60 – col. 5, line 15). Dunbridge discloses to adjust the transmitting direction according transmitting and receiving power ratios (see col. 6, lines 23-36). Therefore, it would have been obvious to one of the ordinary skill in the art at the time of the invention to combine Forssen and Dunbridge for improved signal tracking without fading.

4. Claims 12-14 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Forssen in view of Dunbridge as applied to claims 1, 3-6, 15, 17-19 and 20 above, and further in view of Suzuki.

As to claims 12, 13 and 14, Forssen discloses everything claimed as explained above except for a mobile station apparatus comprising: a first measuring section that measures reception power of the first signal transmitted from the base station apparatus to the mobile station; a second measuring section that measures reception power of the second signal transmitted from the base station apparatus to an apparatus other than the mobile station; and an uplink transmission section that transmits measurement results of the first and second measuring sections to the base station apparatus and a reception power calculating section that calculates a reception power ratio, which is a ratio of the reception power of the first signal to the reception power of the second signal, wherein the uplink transmission section transmits the reception power ratio using a common signal applicable to any mobile station apparatus as the second signal.

Suzuki discloses a mobile station apparatus comprising: a first measuring section that measures reception power of the first signal transmitted from the base station apparatus to the mobile station; a second measuring section that measures reception power of the second signal transmitted from the base station apparatus to an apparatus other than the mobile station; and an uplink transmission section that transmits measurement results of the first and second measuring sections to the base station apparatus and a reception power calculating section that calculates a reception power ratio, which is a ratio of the reception power of the first signal to the reception power of the second signal, wherein the uplink transmission section transmits the reception power ratio using a common signal applicable to any mobile station apparatus as the second signal (see col. 6, lines 5-43). Therefore, it would have been obvious to one of the ordinary skill in

the art at the time of the invention to add the Suzuki features to the modified Forssen and Dunbridge system for an enhanced reception with reduced interference.

As to claim 16, Forssen discloses everything claimed as explained above except for a radio communication method wherein the mobile station apparatus that received the first signal calculates a reception power ratio and transmits it to the base station apparatus. Suzuki discloses a radio communication method wherein the mobile station apparatus that received the first signal calculates a reception power ratio and transmits it to the base station apparatus (see column 6, line 61 to column 7, line 9). Therefore, it would have been obvious to one of the ordinary skill in the art at the time of the invention to combine Suzuki teachings with Forssen system for a redundant system having an enhanced reception.

5. Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Forssen in view of Dunbridge as applied to claims 1, 3-6, 15, 17-19 and 20 above, and further in view of Ward.

As to claims 7 and 8, Forssen discloses everything claimed as explained above except for the base station apparatus wherein, if the determining section determines that the directivity should be changed, the directivity control section broadens the width of directivity of the first signal, adjusts transmission power, changes the directivity orientation and returns the width of directivity to the original value. Ward discloses the base station apparatus wherein, if the determining section determines that the directivity should be changed, the directivity control section broadens the width of directivity of the first signal, adjusts transmission power, changes the directivity orientation and returns

the width of directivity to the original value (see col. 8, line 31 – col. 9, line 36).

Therefore, it would have been obvious to one of the ordinary skill in the art at the time of the invention to combine Ward teachings in the modified Forssen and Dunbridge system for better tracking and reception.

Allowable Subject Matter

6. Claims 9-11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. The following is a statement of reasons for the indication of allowable subject matter: The base station apparatus wherein the determining section sets a third threshold greater than a first threshold, and if the difference between the reception power ratio and the transmission power ratio is greater than the third threshold, determines that a directivity shift of the first signal is large, and if the difference between the reception power ratio and the transmission power ratio is greater than the first threshold and smaller than the third threshold, determines that the directivity shift of the first signal is small. The base station apparatus wherein if the determining section determines that the directivity shift of the first signal is large, the directivity control section broadens the width of directivity to adjust the directivity, and if the determining section determines that the directivity shift of said first signal is small, the directivity control section does not change the width of directivity but changes the directivity orientation. The base station apparatus wherein, if the determining section determines that the directivity shift of the first signal is large, the directivity control section broadens

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the width of directivity, adjusts the directivity and then returns the width of the directivity to the original value, and if the determining section determines that the directivity shift of the first signal is small, the directivity control section does not change the width of directivity but changes the directivity orientation.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.
- a. Myer U.S. Patent 5,870,681 discloses a self-steering antenna array.
 - b. Forssen U.S. Patent 5,848,358 discloses an intracell handover with antenna arrays.
 - c. Fukagawa U.S. Patent 6,188,193 discloses a directivity control antenna apparatus for shaping the radiation pattern antenna of the base station in mobile communication system in accordance with estimated direction.
 - d. Koboyakawa U.S. Patent 6,317,611 discloses a communication device with adaptive antenna.
 - e. Smith U.S. Patent 6,009,124 discloses a high data rate communications network employing an adaptive sectorized antenna.
 - f. Kennedy Jr. U.S. Patent 5,771,439 discloses an adaptive antenna system and method for cellular and personal communication systems.
 - g. Borrás U.S. Patent 5,303,240 discloses a telecommunication system using directional antennas.

- h. Keskitalo U.S. Patent 6,091,788 discloses base station equipment and a method for steering an antenna beam.
 - i. Johannisson U.S. Patent 6,282,434 discloses an uplink and downlink transmission quality improvement by differentiated base station antenna pattern.
 - j. Sato U.S. Patent 5,745,858 discloses a base station transmitter/receiver capable of varying composite directivity of antenna.
 - k. Hakkinen U.S. Patent 5,839,056 discloses a method and apparatus for controlling transmission power of a radio transmitter.
 - l. Harbin U.S. Patent 5,488,737 discloses a land based wireless communication system having a scanned directional antenna.
9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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Any response to this Office Action should be mailed to:

Commissioner of Patent and Trademarks
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Or faxed to:

(703) 308-6306

For formal communication intended for entry, informal communication or draft communication; in the case of informal or draft communication, please label "PROPOSED" or "DRAFT"

Hand delivered responses should be brought to:

Crystal Park II
2121 Crystal Drive
Arlington, VA
Sixth Floor (Receptionist)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marcos L Torres whose telephone number is 703-305-1478. The examiner can normally be reached on 8:00am-5:30pm alt. friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William G Trost can be reached on 703-305-5318. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9314 for regular communications and 703-872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4700.

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Marcos L Torres

Examiner

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Mlt

August 29, 2002

A handwritten signature in black ink, appearing to read 'W. Trost', with a long, sweeping horizontal stroke extending to the right.

WILLIAM TROST
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600